

International Application No. PCT/EP00/08415
Attorney Docket: SCHM3002/JEK

narrow any element of the claims as they stood prior to amendment. Examination of the application as amended is respectfully requested.

Respectfully submitted,
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APPENDIX OF MARKED-UP VERSION OF CLAIMS

10(Amended). An object of value according to claim 8 [or 9], characterized in that the metal layer has gaps in the form of characters and/or patterns.

13(Amended). An object of value according to [at least one of claims 9 to 12] claim 9, characterized in that the screen is present in the form of a dot or line screen.

14(Amended). An object of value according to [at least one of claims 8 to 13] claim 8, characterized in that a layer having a relief structure in the form of diffraction structures is disposed under the metal layer.

15(Amended). An object of value according to [at least one of claims 1 to 14] claim 1, characterized in that the thermochromic layer is all over.

16(Amended). An object of value according to [at least one of claims 1 to 14] claim 1, characterized in that the thermochromic layer is provided only in certain areas.

19(Amended). An object of value according to [at least one of claims 1 to 18] claim 1, characterized in that the thermochromic layer is disposed over the effect layer.

20(Amended). An object of value according to [at least one of claims 1 to 18] claim 1, characterized in that the thermochromic layer is disposed under the effect layer.

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23(Amended). An object of value according to claim 20 [or 21], characterized in that the information has visually and/or machine testable properties.

25(Amended). An object of value according to [at least one of claims 21 to 24] claim 21, characterized in that the information is black.

26(Amended). An object of value according to [at least one of claims 1 to 25] claim 1, characterized in that the thermochromic layer is opaque below a predetermined temperature and at least translucent above said temperature.

27(Amended). An object of value according to [at least one of claims 1 to 25] claim 1, characterized in that the thermochromic layer is translucent or transparent below a predetermined temperature and opaque above said temperature.

28(Amended). An object of value according to [at least one of claims 1 to 27] claim 1, characterized in that the security element is a label.

29(Amended). An object of value according to [at least one of claims 1 to 28] claim 1, characterized in that the object of value is a security paper, security document or product package.

36(Amended). A security element according to [at least one of claims 32 to 35] claim 32, characterized in that the screen is present in the form of a dot or line screen.

37(Amended). A security element according to [at least one of claims 32 to 36] claim 32, characterized in that a layer having a relief structure in the form of diffraction structures is disposed under the metal layer.

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38(Amended). A transfer material for producing a security element according to [any of claims 30 to 37] claim 30, characterized in that the transfer material has a carrier material on which a security element according to [any of claims 30 to 37] claim 30 is disposed as a transferable layer.

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Security element

This invention relates to a security element for protecting objects of value, the security element having a thermochromic layer. The invention relates further to an object of value, a security document and a security paper with such a security element and to a foil material for producing such a security element.

It has been known for some time to use thermochromic materials for protecting documents of value. For example, DT 22 12 350 describes a security thread made of transparent plastic which has cavities. Said cavities contain a liquid-crystalline material which shows a reversible color change upon an increase or decrease of temperature.

EP 0 608 078 B1 likewise discloses a security thread with thermochromic properties. In this case a plastic material is provided with a print or with characters which are formed by partly demetalizing a metal layer. Said print or negative characters bear a thermochromic coating which is colored at normal temperature. When heated the thermochromic coating becomes colorless so that the characters therebelow become recognizable. Alternatively, a thermochromic coating can be used which is colorless at normal temperature and becomes colored when heated so that the characters disappear. Said thread is incorporated into the security paper so as to pass directly to the surface in certain areas, so-called "windows."

Such thermochromic security threads have the disadvantage, however, that they are very narrow and the thermochromic effect is recognizable only in the relatively small window areas, so that the optical effect evoked by the color change of the thermochromic material is very inconspicuous. Such security elements therefore do not offer very high protection from forgery.

The invention is therefore based on the problem of providing a security element that offers high protection from forgery and avoids the disadvantages of the prior art.

This problem is solved by the features of the independent claims. Developments are the subject matter of the subclaims.

According to the invention, the security element is disposed completely on the surface of the object and combined with an effect layer having visually and/or machine